

## Proposed Amendments to the Truck and Off-Road Vehicle Regulations



Sacramento – September 30, 2010  
El Monte – October 4, 2010  
San Diego – October 5, 2010  
Fresno – October 12, 2010

California Environmental Protection Agency



Air Resources Board

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## Overview and Agenda

- Truck and Bus Rule and Drayage Truck Rule
- Tractor Trailer Greenhouse Gas Rule
- Off-road Rule and Large Spark Ignition Engines Rule

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## Economy Has Changed

- Emissions are lower than originally estimated
- Can provide economic relief and flexibility
- Can reduce costs substantially
- Achieves emissions reductions
- Continue progress to cleaner air
- Regulations still needed

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## Amendments Would Provide Substantial Relief

- Delay implementation
- Reduce compliance obligations
- Significantly reduce costs
- Rules remain cost effective

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## Amendments Continue to Preserve Benefits

- Meet State Implementation Plan (SIP)
  - PM<sub>2.5</sub> by 2014
  - Ozone by 2023
- Reduce mortality
- Reduce localized risk

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## Proposals Meet Board Directive

Continue progress toward cleaner air	√
Maintain public health benefits	√
Meet SIP commitments	√
Incentivize greenhouse gas reductions	√
Improve cost effectiveness	√
Lower peak year costs	√
Consider cumulative impact of both regulations	√
Provide most relief to fleets hardest hit by recession	√
Ensure emission reductions as economy recovers	√
Support clean technologies	√

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## Progress to Date

- Update inventories with latest information
  - Off-road Rule and Truck and Bus Rule
- 15 workshops in past year
  - Inventory updates
  - Proposed amendments
  - PM mortality findings
- Fourth and final series of workshops

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## Next Steps

- Complete workshop series
  - October 12, 2010
- Publish staff report
  - October 20, 2010
  - Begins formal comment period
- Board hearing
  - December 16 & 17, 2010

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## Proposed Amendments to the Truck and Bus Rule



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## Major Changes Proposed

- Total cost of the regulation cut 60 percent
- Much lower costs in next 5 years
- Lower costs for all fleets
- Fleets able to keep trucks longer
- Still able to reward early action
- More relief for fleets most affected by the economy
- Simplified regulation

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## Trucks Less Than 26,001 lbs\*

- No PM retrofit requirements
- No requirements until 2015
- 40% of in-state trucks



\* Trucks less than 26,000 lbs gross vehicle weight rating (GVWR)

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## Trucks More Than 26,000 lbs\*

- No PM filters for 1997 model year and older
- PM filters for 1998-2006 model year engines
  - Start January 1, 2012
- No replacements until 2015



\* GVWR

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## All Trucks

- Must have 2010 model year engines by 2023
- Replace trucks 20 years old or older
  - 2015 to 2020
- Replace all 2009 model year and older
  - 2021 to 2023

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## Changes Provide Substantial Relief\*

Issue	Existing Regulation	Proposed Amendments
PM requirements begin	2011	2012
# trucks exempt from PM requirements	<10,000	160,000
# of companies subject to PM requirements	175,000	100,000
Truck replacements begin	2013	2015
Age of truck replaced prior to 2020	12 years old	20 years old

\* Based on in-state fleet population, but applies equally to out-of-state fleets and vehicles.

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## Useful Life of Truck Extended

- PM retrofit extends useful life of truck 8 years
  - Compared to 4 years in existing rule
- At least half as many trucks retrofit then replaced

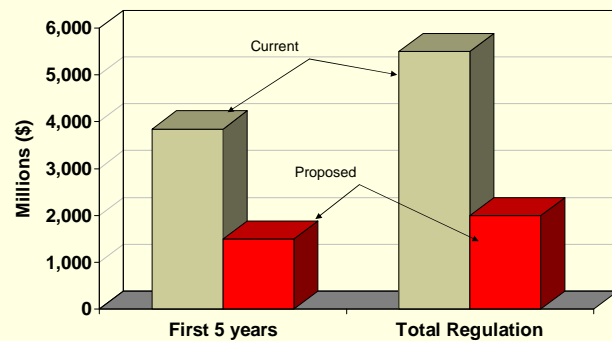
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## Significant Cost Savings to Fleets

- 2010 to 2014 costs down by 60%
- Peak year costs in 2014
  - Reduced more than half
- Overall 15 year costs down 60%
- Costs for most local fleets down 70%
- Cost effectiveness
  - \$1.40 per lb NOx
  - \$40 per lb PM

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## Significant Cost Savings to Fleets



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## Estimated Margin

- No change to baseline emissions estimates from those presented in August workshops
- Estimated impact of each proposed rule
  - Trucks and Off-Road
- Presented in NOx equivalent emissions
  - Assuming average economic recovery
  - Forecast assumptions unchanged from those previously presented

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## Draft Revised Margin

Combined On-Road and Off-Road

- San Joaquin Valley
  - Previous estimate: 40 tons/day NOx Eq.
  - With proposed revisions: 0 tons/day NOx Eq.
- South Coast
  - Previous estimate: 61 tons/day NOx Eq.
  - With proposed revisions: 9 tons/day NOx Eq.

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## Truck and Bus Regulation Amendment Details

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## Applicability

- Diesel trucks and buses operating in California
  - Gross vehicle weight rating (GVWR) more than 14,000 lbs
  - Agricultural use yard trucks with off-road engines
  - Interstate, intrastate, international, and other
- Any person, business, or federal government agency who owns, leases, rents, or sells a vehicle in California
- California based brokers and dispatchers
- Excludes most vehicles subject to other in-use regulations

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## Requirement for Smaller Trucks

Less than 26,001 lbs GVWR

- Truck replacements start 2015
  - Replace when 20 years old until 2020
  - Replace remaining pre-2010 engines 2020-2023
- No PM filter requirements
- No reporting required
- Exempt until 2020 if PM filter by 2014

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## Requirements Larger Trucks

More than 26,000 lbs GVWR

- Meet compliance schedule
  - Best available control technology (BACT)
- PM filters 2012-2014
  - 1998-2006 model year engines
  - Can keep truck 8 more years
- Replacements start 2015
  - 20 years old or older until 2020
  - Any truck exempt if PM filter installed by 2014

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## BACT Schedule for Larger Trucks

More than 26,000 lbs GVWR

- Fleets that meet the schedule requirements are done
- Can keep truck 8 more years

January 1	Engine Model Year	Action
2012	1998-2000	Install BACT PM Filter
2013	2001-2004	
2014	2005-2006	
2015	Pre-1994	Replace with 2010 engine or equivalent emissions
2016	1994-1995	
2017	1996-1997	
2018	--	
2019	--	
2020	2000 and older	
2021	2001-2004	
2022	2005-2006	
2023	All Vehicles	

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## Options that Provide More Flexibility

- Phase-in option to assure costs are not all at once
  - Small fleets with 1 to 3 vehicles
  - Fleets with 4 or more vehicles
- Compliance credits
  - Used to delay clean-up of another vehicle

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## Phase-In Option for Small Fleets

With 1 to 3 trucks more than 26,000 lbs GVWR

- Optional phase-in
  - First PM filter by 2014
  - Second PM filter by 2015
  - All must have PM filter by 2016
- Report when not meeting BACT schedule
  - 2012 to 2016
- Meet BACT schedule starting 2020

Note: PM filter includes OEM and retrofit filters

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## Phase-In Option for Large Fleets

4 or more trucks more than 26,000 lbs GVWR

- Option to phase-in requirements
  - 30% PM filters by 2012
  - 60% PM filters by 2013
  - 90% PM filters by 2014
  - Remaining 10% of fleet replaced by 2016
- Meet BACT schedule starting 2020
- Must opt-in by January 31, 2012

Note: PM filter includes OEM and retrofit filters

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## Additional Relief for Fleets that Have Downsized

- Reduced requirement if fleet is smaller
  - Compared to October 1, 2006 baseline
- Available if utilizing phase-in option
- Expires January 1, 2016
- If the fleet size is 25% smaller
  - Subtract 25% from the PM requirement

Example if 25% smaller	2012	2013	2014	2015
Safe Harbor PM Filter Phase-in	30%	60%	90%	90%
Fleet Size Change	-25%	-25%	-25%	-25%
<b>Required for existing fleet</b>	<b>5%</b>	<b>35%</b>	<b>65%</b>	<b>65%</b>

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## Early Retrofit Credits

- Treat another vehicle as compliant until 2017
  - For each PM filter installed by July 2011
- Report retrofit vehicle and which vehicle to get credit
- No credit for retrofits to comply with other in-use regulations

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## Other Clean Vehicle Credits

- Treat another vehicle as compliant until 2017
  - For each 2010 fuel efficient hybrid vehicle
  - For each alternative fueled vehicle
- Must report clean vehicle and vehicle to get credit
- No credit if used to comply with other in-use regulations

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## Special Provisions

- Low use
- Ag vehicles
- Log trucks
- School buses
- Street sweepers
- Other special provisions

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## Low Use Exemptions

- Up to 1,000 miles per year for most vehicles
- Up to 1,000 miles and 100 PTO hours per year
  - If vehicle has PTO for stationary work
- Emergency use
  - Vehicles exempt during emergency events
  - Does not count towards usage limits
- 3 day pass
  - Temporary permit to operate non-compliant truck

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## Agricultural Vehicle Provisions

- Extend initial reporting to March 31, 2011
- Allow use of small fleet provisions
- Treat all livestock feed trucks as eligible for specialty vehicle exemption
  - Currently limited to calf and cattle feed lots
- Clarify language for vehicle definitions
  - Farm to first processor

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## Optional Log Truck Provision

- Opt-in by January 2012
- 2010 engine emissions equivalent
  - Starts January 1, 2014
  - 10% of reported log trucks per year
  - No PM retrofits
- Total number eligible may not increase
- No other credits for reported log trucks
- May operate statewide
- Must have "AG" label on both doors

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## Changes to School Bus Provision

- Excludes GVWR less than 26,001 lbs.
- One year delay of PM filter phase in:
  - 33% by 2012, 66% by 2013, 100% by 2014
- No reporting required
- No replacements except for buses unable to be retrofitted by 2018



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## Street Sweepers (two engines)

- Main engine determines date of requirement
- Auxiliary engine operational limits
  - 450 hours per year until 2014
  - 100 hours per year thereafter
- Auxiliary engine compliance
  - Meet PM BACT same time as drive engine

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## Special Provisions Summary

- Manufacturer delays
- PM retrofit safety
- Replace engines that could not be equipped with PM filter by 2018
- Unique vehicle exemption starting 2015
  - No used vehicle available with 2010 engine and
  - No PM filter available by 2014

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## Provisions No Longer Needed

- Motor coaches
- Attainment area operation
- Certain cab-over engine truck tractors
- NOx low usage exemption

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## Funding Opportunities Will be Expanded

- New compliance deadlines expand eligibility
- Incentive funds (Moyer, Goods Movement, AB118)
  - Projects that achieve early or extra emission reductions
  - Upgrade options include: retrofits, replacements, repowers, hybrid and electric technologies
- School bus funding
- Loan assistance programs available

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## Emissions Inventory

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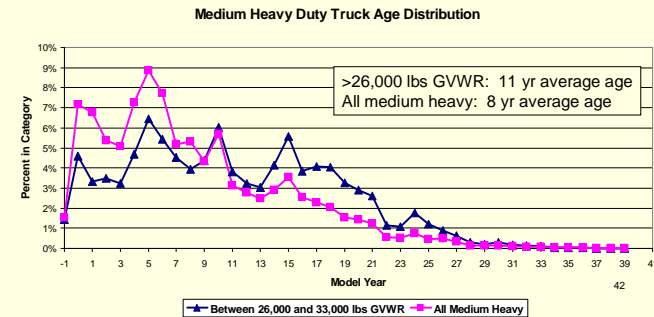
## Truck and Bus Inventory

- Reflects recession
- Revisions to baseline for categories
  - Odometer
  - Out-of-state miles traveled
  - Other changes discussed in August
- Medium Heavy category split by GVWR

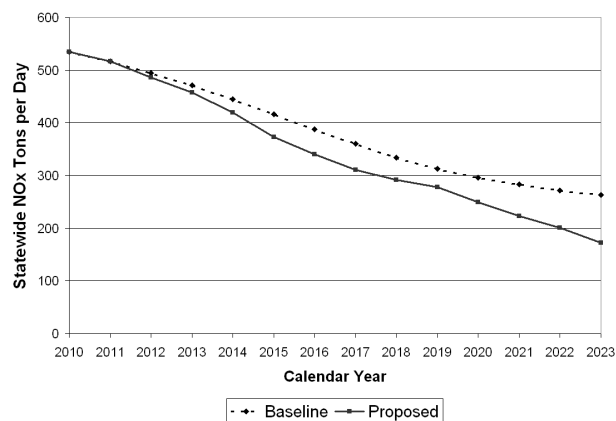
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## Medium Heavy Population Split

- Analyzed 2005 DMV Data
  - 30% of medium heavy trucks are greater than 26,000 lbs GVWR
  - On average they are three years older
  - No change to mileage accrual, emission rates, or emissions

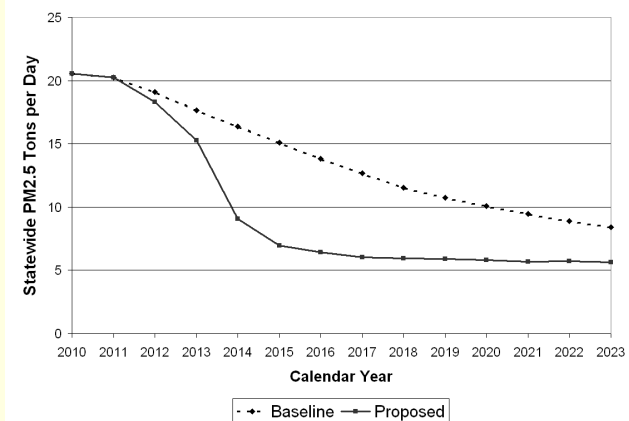


## Draft Statewide Truck and Bus NOx Emissions



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## Draft Statewide Truck and Bus PM2.5 Emissions



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## For More Information...

Truck and Bus Regulation information:

[www.arb.ca.gov/dieseltruck](http://www.arb.ca.gov/dieseltruck)

Listserv (onrdiesel):

[http://www.arb.ca.gov/listserv/listserv\\_ind.php?listname=onrdiesel](http://www.arb.ca.gov/listserv/listserv_ind.php?listname=onrdiesel)

DIESEL HOTLINE:

(866) 6-DIESEL (866-634-3735)

Email: [8666diesel@arb.ca.gov](mailto:8666diesel@arb.ca.gov)

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## Proposed Amendments to the Drayage Truck Regulation



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## Harmonize Requirements with Truck and Bus Rule

- No Phase 2 requirement to modernize to 2007 engines
- Same Level 3 PM filter requirement until 2017
  - 1994-2003 MY engines with PM filter by 2010
  - 2004 MY engines with PM filter by 2012
  - 2005-2006 MY engines with PM filter by 2013
- Sunset regulation January 1, 2017
  - Reporting, recordkeeping, and labeling requirements sunset
  - Become subject to Truck and Bus regulation

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## Modify Scope and Drayage Truck Definition

- Change definition to include drayage trucks operating outside port or rail yard properties
  - Stops circumvention of regulation (dray-off)
  - Enables enforcement against noncompliant drayage trucks and their dispatching motor carriers
  - Port/Rail bound and originated cargos
  - Includes all trucks that haul cargos until cargo is off-loaded
  - Includes trucks hauling empties and chassis
- Explore expanding scope to cover all trucks greater than 26,000 lbs GVWR starting 2014

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## Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Regulation (Tractor-Trailer GHG Regulation)



September/October 2010 Regulatory Workshops

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## Overview of Current Regulation



- Became effective January 1, 2010
  - Applicability:
    - Long-haul tractors pulling 53' or longer box-type trailers
    - 53' or longer box-type trailers (dry-van & refrigerated van trailers) pulled by long-haul tractors
  - Responsible for compliance: owner, driver, motor carrier, California-based broker, and California-based shipper
  - All owners operating affected vehicles in California regardless of where their vehicle is registered
- Optional phase-in for small fleets (2013-2016) and large fleets (2010-2015)

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## Tractor Requirements



- 2011+ model year (MY) sleeper cabs:
  - SmartWay certified as of 1/1/2010
- 2011+ MY day cabs:
  - Low rolling resistance tires as of 1/1/2010
- All pre-2011 MY sleeper cabs & day cabs:
  - Low rolling resistance tires by 1/1/2012

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## Trailer Requirements



- 2011+ MY 53-ft+ box-type:
  - SmartWay certified *or*
  - Retrofitted with SmartWay technologies as of **1/1/2010**
    - Low rolling resistance tires (1.5%+ fuel efficiency improvement)
    - Aerodynamic devices
      - 5%+ fuel efficiency improvement for dry van
      - 4%+ fuel efficiency improvement for reefer van
- Pre-2011 MY 53-ft+ box-type
  - Same requirements as 2011+ MY trailers
  - Must comply by **1/1/2013** or choose compliance phase-in option

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## Trailer Requirements Compliance Phase-In Options

- Large Fleets (21 or more trailers)
  - Phase-in: 2010 – 2015
  - Early compliance option
  - Submit compliance plan by **July 1, 2010**
- Small Fleets (20 or fewer trailers)
  - Phase-in: 2013-2016
  - Submit compliance plan by **July 1, 2012**

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## Proposed Amendments to the Tractor-Trailer GHG Regulation



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## Proposed Amendments

- Additional phase-in option for large fleets
- Additional flexibility for fleets to report
- Additional delayed compliance for certain refrigerated vans
- Modifications to verified equipment
- Drayage exemption clarified
- Storage trailer exemption
- Temporary exemptions & passes

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## Proposed Amendments (continued)

- Delayed compliance for trailers that cannot be retrofitted
- Recordkeeping requirement for dealers and lessors
- Extended deadlines for required use of low rolling resistance tires
- Exemption for open shoulder drive tires on tractors
- Other clarifying language

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## Additional Phase-in Option for Large Fleets\* -- Option 1 vs. Option 2

- Registration: Option 1 by July 1, 2010; Option 2 by July 1, 2011
- Option 2 phase-in begins one year later & is more accelerated

Option 1 % of Trailers	Option 2 % of Trailers	Compliance Before
5%	--	January 1, 2011
15%	20%	January 1, 2012
30%	40%	January 1, 2013
50%	60%	January 1, 2014
75%	80%	January 1, 2015
100%	100%	January 1, 2016

\*Applies to fleets with 21 or more 53-ft box trailers

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## Additional Flexibility for Fleets to Report

- Current regulation
  - Requires fleets to identify, up-front, the specific trailers to be brought into compliance during each compliance year
- Proposed amendment
  - Allows fleets to report compliance on an annual basis, or continue with phase-in plan as reported up-front

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## Delayed Compliance for Some Refrigerated Vans

- Additional delayed compliance for 2009 model year refrigerated vans with 2003 or later TRU\*
  - Current regulation allows delay for 2003-2008 reefer trailers with 2003 or later TRU
  - Proposed modification adds delayed compliance for 2009 reefer trailers with 2003 or later TRU
  - No reporting required for these trailers

Trailer Model Year	Compliance Before
2003-2004	January 1, 2018
2005-2006	January 1, 2019
2007-2009	January 1, 2020

\*Applies to the Tractor-Trailer GHG Rule only and does not change or delay any of the engine requirements under the separate Transport Refrigeration Unit Regulation

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## Modifications to Verified Equipment

- Aerodynamic technologies must be verified or certified by US EPA SmartWay program, *and*
- Aerodynamic technologies must either be installed:
  - To maintain their status as SmartWay verified aerodynamic technologies according to the requirements of US EPA SmartWay program, *or*
  - In a configuration approved by ARB

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## Drayage Exemption Clarified

- Drayage exemptions apply if:
  - Trailer pulled by drayage tractor is off-loaded from ship or rail car just prior to being pulled by drayage tractor
    - Must show evidence of port/rail yard of origin
  - Trailer pulled by drayage tractor is taking the trailer to a port or rail yard to be loaded onto ship or rail
    - Must show evidence of port/rail yard destination

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## Storage Trailer Exemption

- Used for storage of items at fixed location
- Exempt from aerodynamics and tire requirements
- Must register with ARB for exemption
- Must be empty when traveling on California highways *or*
- Apply for “Pass” to move loaded with freight

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## Temporary Exemptions and Passes

- Apply to ARB for temporary passes for:
  - Relocation of trailers (storage or local-haul)
  - Transfer of ownership of trailers
  - Once a year 3-day pass for non-compliant tractors
  - Trailers that cannot be retrofitted

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## Recordkeeping Requirement for Dealers and Lessors

- California-licensed vehicle dealers and lessors that notify buyers or lessees of obligations from Tractor-Trailer GHG regulation:
  - Must retain records for 3 years

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## Extended Deadlines for Low Rolling Resistance Tires

### ■ Tractor Requirements

- Current regulation:
  - 2010 and older MY tractors must use SmartWay verified tires by January 1, 2012
- Proposed amendment:
  - 2010 and older MY tractors must use SmartWay verified tires by January 1, 2013
- No proposed changes in tire requirements for 2011 and newer MY tractors

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## Extended Deadlines for Low Rolling Resistance Tires

### ■ Trailer Requirements

- Current regulation:
  - 2010 and older MY trailers must use SmartWay verified tires by January 1, 2013, **or**
  - According to Large or Small Fleet Compliance Schedule
- Proposed amendment:
  - All 2010 and older MY trailers must use SmartWay verified tires by January 1, 2017
  - No phase-in for tires
- No proposed changes in tire requirements for 2011 and newer model year trailers

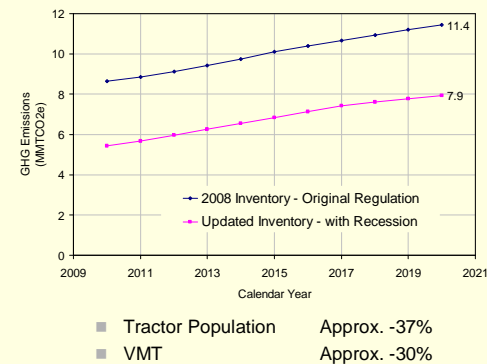
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## Exemption for Open Shoulder Drive Tires

- Tractor may operate in California with 2 or more non-SmartWay open shoulder drive tires if:
  - No SmartWay verified open shoulder tires available
- Exemption available for 2 years after SmartWay verifies open shoulder tires

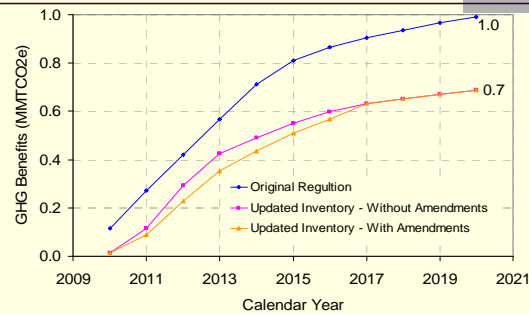
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## Updated Inventory - California



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## Impacts on Emission Benefits – California



GHG Benefits (MMTCO <sub>2</sub> e):	CY 2020	Cumulative 2010-2020
Original Regulation	~1.0	7.6
Updated Inventory without Amendments	~0.7	5.1
Updated Inventory with Amendments	~0.7	4.9

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## For More Information...

### On-Road Heavy Duty Diesel Section

#### DIESEL HOTLINE:

- (866) 6-DIESEL (866-634-3735)

- Email: [8666diesel@arb.ca.gov](mailto:8666diesel@arb.ca.gov)

#### the TRUCK STOP web address:

<http://www.arb.ca.gov/msprog/truckstop/truckstop.htm>

#### Tractor-Trailer Greenhouse Gas Regulation

Web address: <http://www.arb.ca.gov/cc/hdghg/hdghg.htm>

Listserv:

[http://www.arb.ca.gov/listserv/listserv\\_ind.php?listname=hdghg](http://www.arb.ca.gov/listserv/listserv_ind.php?listname=hdghg)

SmartWay program information: <http://epa.gov/smartway/>

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## Proposed Amendments to the Off-Road Diesel Regulation



September and October 2010

California Environmental Protection Agency  
Air Resources Board



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## Outline

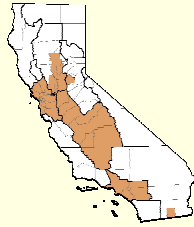
- Overview
- Major Relief Provisions
- Minor Amendments and Clarifications
- Inventory Impacts of Amendments
- Next Steps



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## Why is the Regulation Still Needed?

- Health impacts still significant
- Even with recession and revised emission estimates, localized risk impacts remain
- Near- and long-term reductions still needed for air quality, SIP



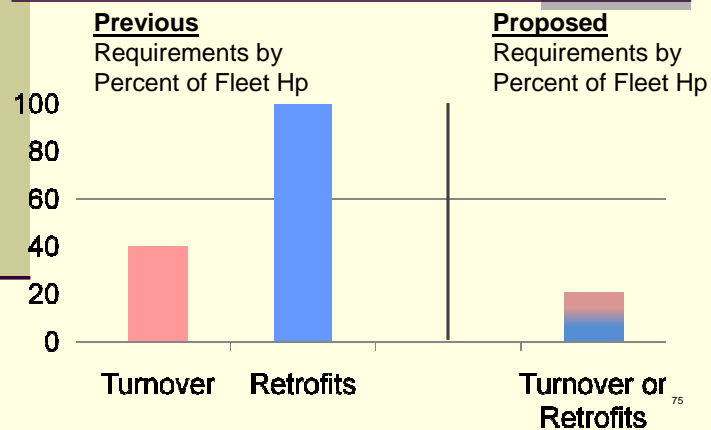
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## Major Changes Proposed

- Delay implementation
- Allow compliance without retrofits
- Remove balloon payment
- Ease annual requirements
- Preserve credits
- Incentivize early action

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## Requirements in First Five Years Cut by ~75%



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## Amendments Provide Substantial Relief

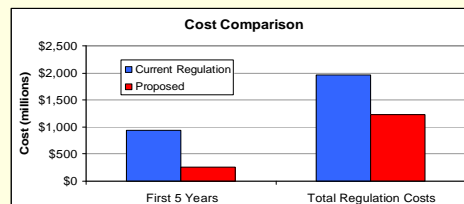
Issue	Existing Regulation	Proposed Amendments
Initial Large Fleet Requirements	2010	2012
Number of mandatory retrofits	>100,000	0*
Percent of fleets that can comply with 8 to 10% turnover annually, no other actions	~30%	100%
Maximum portion of the fleet for which retrofit or replacement required by 2014	~85%	21%

\*Retrofits no longer required for any fleets.

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## Significant Cost Savings to Fleets

- 2010 to 2014 costs down by 75%
- Peak year cost moved from 2013 to 2017, lowered 55%
- Overall 20 year costs down ~40%
- Reductions remain cost effective
  - NOx ~\$3/lb
  - PM ~\$60/lb



## Proposed Relief Provisions



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## Overview of Existing Regulation

Compliance requirements and deadlines vary by fleet size

Fleet Size Category	Description	Previous Dates and Requirements
Small	2,500 hp and under	2015-2025 PM only (no vehicle or engine turnover)
Medium	2,501 to 5,000 hp	2013-2020 PM and NOx
Large	Over 5,000 hp State and federal government fleets	2010-2020 PM and NOx

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## Existing NOx and PM Requirements

In each year, two ways to meet the NOx and PM requirements:

- Fleet average targets for NOx and PM  
or
- **NOx:** Turn over certain % of fleet horsepower per year (8-10% most years)
- **PM:** Install exhaust retrofits on certain % of fleet horsepower per year (20% most years)

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## Overview of Proposed Amendments

1. Delay performance requirements by two years (retrofits, turnover)
2. Combine NOx and PM, lower annual requirements, and allow fleets to comply through turnover only
3. Provide easier compliance path for fleets under 500 hp
4. Remove 2013 'balloon payment'

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## Overview of Proposed Amendments Cont'd

5. Increase low use threshold
6. Give credit for reduced hp from 2010 to 2011
7. Exempt 2010-compliant fleets from 2012 requirements
8. Extend double credit for retrofits
9. Maintain turnover rate for a longer period, from 2017 to 2022

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## 1. Delay Regulation Start Date Two Years

- Large fleets: March 1, 2012
- Medium fleets: March 1, 2015
- Small fleets: March 1, 2017



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## 2. Combine NOx and PM Fleet Averages and BACT Requirements

- Combine fleet averages
  - Approx. same number of fleets will face requirements
- Combined BACT (turnover or retrofits) at 8 to 10% annually (4.8% in 2012)
  - Lowers total horsepower fleets are required to address each year from 28% of the fleet hp to 8 to 10% of the fleet hp
  - Fleets can comply through turnover only

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### 3. Provide Simpler Option for Smallest Fleets

- New path for fleets under 500 Hp
  - 45% of all fleets
  - 4% of the emissions statewide
- Fleets can opt to phase out Tier 0 and Tier 1 vehicles from 2017 to 2027
  - No fleet averaging, or retrofits
- BACT remains an option

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### 4. Remove 2013 Balloon Payment

- Drastically reduce 2013 requirements
  - “Balloon payment” from AB8 2X changes
  - Turnover or retrofit 8%
    - Down from retrofit 36% **and** turn over 14.4%

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### 5. Raise low-use threshold

- Raise threshold from 100 to 150 hours per year
  - Low use vehicles do not face requirements or count toward fleet horsepower
  - Hour meter and reporting requirements remain the same

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### 6. Give Credit for Reduced 2010-2011 Horsepower

- Grant fleets credit for reducing total horsepower from March 1, 2010, to March 1, 2011

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## 7. Free Pass for Early Compliance

- Grant fleets that complied with the 2010 requirements, which were not enforced, a 'free pass' on the 2012 requirements
- Affects approximately 2/3 of large fleets

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## 8. Further Incentivize Retrofits

- Double credit period extended to 12 months prior to first compliance for all fleet sizes
  - Large fleets to 2011
  - Medium fleets to 2014
  - Small fleets to 2016

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## 9. Maintain NOx Turnover for a Longer Period

- Lower NOx fleet averages from 2017 to 2022
  - Require fleets to move to more Tier 4i and Tier 4
  - Continue turnover for a longer period for most fleets
  - More NOx benefits in later years
  - Total cost of the regulation still reduced

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## Updates to Minor Amendments and Clarifications



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## Minor Amendments - 1

- Remove requirements to report emissions factors for FLEX engines
  - Flex engines will be treated as one tier previous
- Clarify turnover exemption for up to 15% of a fleet's horsepower if retrofit by March 1, 2011
- Adding vehicle requirements updated
  - Tier 2 required one year earlier than proposed in June/July workshops
  - Large/Medium fleets, Tier 2 required as of March 1, 2011

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## Minor Amendments - 2

- Remove hours in fleet average provisions
- Incentivize diesel electric hybrids
- Yard trucks to remain separated between on-road and off-road
- Remove PM compliance after final compliance date requirements
- Recalibrate SOON targets to work with revised NOx targets

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## Other Possible Amendments Being Considered

- Treat Captive Attainment Area fleets as small fleets
  - No requirements until 2017
  - Require label addition of "CAAF" or similar
- Require labels on both sides of the vehicle
  - Long lead time to continue labeling would be provided

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## On-road /Off-road 'Bubble' Concept

- Options and Ideas
  - Allow retrofitting additional on-road trucks to count toward off-road requirements
    - Trucks under 26,000 lbs GVWR
    - Considering 1 retrofit truck = 200 off-road hp
  - All vehicles newer than 7-8 years old
  - Pilot program with individual fleets
  - Apply to Executive Officer to demonstrate reduced emissions
- Suggestions

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## More Flexible Moyer Funding for Small Fleets

- Under current Moyer guidelines, to be funded, projects must be completed three years prior to first compliance date
- Proposed change - Allow small off-road fleets to receive funding for projects that are two years surplus
- To be included in Moyer Guideline changes proposed to Board at March 2011 hearing
- Delays will increase eligibility for medium and small fleets

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## Emissions Inventory Impacts of Amendments



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## Off-Road Emissions

- Inventory reflects
  - Recession and Baseline inventory revisions
    - Incorporated low use vehicle activity – minor reduction to emissions
  - Proposed rule provisions

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## Estimated Margin

- No change to baseline emissions estimates from those presented in August workshops
- Estimated impact of each proposed Rule
- Presented in NOx equivalent emissions
  - Assuming average economic recovery
  - Forecast assumptions unchanged from those previously presented

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## No Additional Margin for 2014 SIP

### Combined On-Road and Off-Road

#### ■ San Joaquin Valley

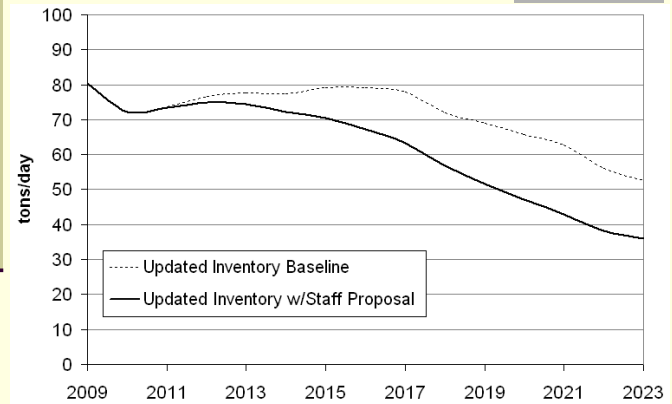
- Previous estimate: 40 tons/day NO<sub>x</sub> Eq.
- With amendments : 0 tons/day NO<sub>x</sub> Eq.

#### ■ South Coast

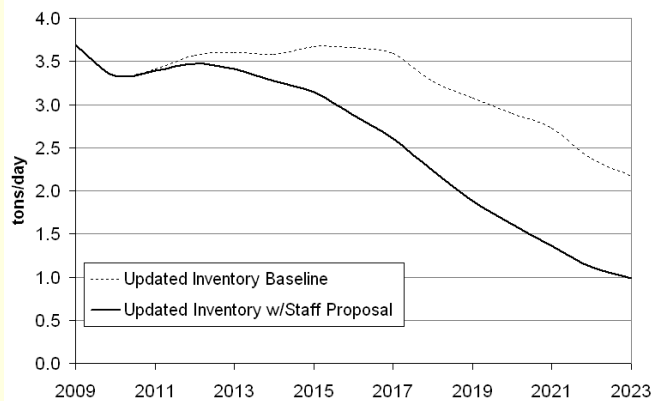
- Previous estimate: 61 tons/day NO<sub>x</sub> Eq.
- With amendments: 10 tons/day NO<sub>x</sub> Eq.

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## Draft Statewide Off-Road NO<sub>x</sub> Emissions



## Draft Statewide Off-Road PM<sub>2.5</sub> Emissions



## Next Steps



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## What to Expect During Delay

- ARB still to enforce reporting, labeling, idling requirements
  - Performance requirements delayed two years
- How can ARB assist other agencies seeking emission reductions (local districts etc.)?
  - DOORS Data?
  - Certification of clean fleets?
  - Help checking status of fleets bidding on jobs?
  - Other ideas?

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## Timing of Next Steps

- Complete workshop series
  - October 12, 2010
- Publish staff report
  - October 20, 2010
  - Begins formal comment period
- Board hearing
  - December 16 & 17, 2010

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## For More Information...

Off-Road Regulation information: [www.arb.ca.gov/ordiesel](http://www.arb.ca.gov/ordiesel)

Listserv (ordiesel):

[www.arb.ca.gov/listserv/listserv\\_ind.php?listname=ordiesel](http://www.arb.ca.gov/listserv/listserv_ind.php?listname=ordiesel)

DIESEL HOTLINE:

(866) 6-DIESEL (866-634-3735)

Email: [8666diesel@arb.ca.gov](mailto:8666diesel@arb.ca.gov)

DOORS Reporting Questions:

(877) 59-DOORS (877-593-6677)

Email: [doors@arb.ca.gov](mailto:doors@arb.ca.gov)

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## Proposed Amendments to the Large Spark Ignition Engine Regulation



September & October 2010

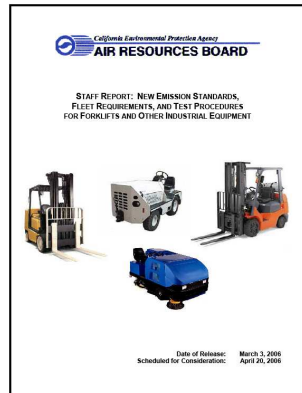
California Environmental Protection Agency

Air Resources Board



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## Background – Off-Road LSI Regulation



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## Background – Off-Road LSI Regulation

- First adopted in 1998
  - New Engine Standards and Test Procedures
    - 3.0 gram per brake horsepower-hour (g/bhp-hr) standard phased in between 2001 and 2004
    - 75 percent emission reduction vs. uncontrolled
- Amended in May 2006
  - New Engine Standards and Test Procedures
    - 2.0 g/bhp-hr standard in 2007; 0.6 g/bhp-hr standard in 2010
    - 95 percent emission reduction vs. uncontrolled
  - Retrofit Kit Verification Procedures
  - Fleet Average Requirements

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## LSI Fleet Requirements Overview

Fleet Average Emission Level in Grams HC+NO<sub>x</sub> per kilowatt-hour  
(brake horsepower-hour)

LSI Fleet Type	Number of units	By 1/1/2009	By 1/1/2011	By 1/1/2013
Large fleet – forklift component	26 +	3.2 (2.4)	2.3 (1.7)	1.5 (1.1)
Mid-size fleet – forklift component	4-25	3.5 (2.6)	2.7 (2.0)	1.9 (1.4)
Non-forklift fleet	N/A	4.0 (3.0)	3.6 (2.7)	3.4 (2.5)

- Applicability
  - 4 or more forklifts, tow tractors, sweeper/scrubbers, or pieces of airport ground support equipment (GSE)
  - Small fleets exempt
- Agricultural fleet requirements
  - 1990+ owned uncontrolled forklifts or 3.0 g/bhp-hr average

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## Minor Amendments and Clarifications



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## Minor Amendments and Clarifications

- Definitions – changes and additions:
  - “agricultural operations” – harmonize with the Off-Road Diesel Regulation to provide greater relief to forestry and nursery
  - “baseline inventory” – clarify applicability to leased/rental equipment
  - “FAEL” – replace 19kW electric threshold with work requirement; discuss treatment of retired and experimental equipment
  - “GSE” – remove “other” and define “carts”
  - “In-field” – add new definition
  - “Operator” – clarify relationship to dealers
  - “Retired” – add new definition; discuss “boneyards”
- Record keeping
  - Remove fuel quality requirement
- Experimental controls
  - Exclude this equipment from fleet average calculations

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## Proposed Amendments and Considerations



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## Proposed Amendments – Limited Hours of Use Exclusion

- Establish a limited hours of use (LHU) exclusion for operators subject to the fleet average requirements for 2011+
  - Current exclusion sunsets on January 1, 2011
- LHU threshold would be set at 150 hours per year in harmonization with Off-Road Diesel rule
- No change to agricultural LHU provisions
  - No sunset
  - 250 hours per year
- Focus on cost effective emissions reduction

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## Proposed Amendments – Broaden Compliance Extensions

- Allow operators to apply for two-year extension when no retrofits available
  - Operator could subsequently apply for one follow-on two-year extension
- Approval geared toward larger, more costly equipment, for example:
  - Greater than six liter displacement
  - LPS/GS Underwriters Laboratories safety designation
- Other approvals available on case by case basis
- Focus relief on retrofit requirements
  - Recognize retrofits not a perfect fit for every vehicle

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## Emissions Estimates

- HC+NOx benefits slightly less than original regulation
- Equipment impacted by modifications:
  - LHU: ~3-5%
  - LPS: ~3%
  - > 6L: ~1%

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## Alternatives



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## Other Alternatives Considered but Not Proposed

- Lower and higher LHU thresholds
  - Lower threshold would have harmonized, but diesel proposing to raise
  - Higher threshold would have relinquished emission benefits
- Multiple annual extensions
  - Proposed two-year extensions decreases administrative burden on operators and ARB while recognizing that the product development cycle is typically greater than one year

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## For More Information...

LSI Fleet Regulation information:

[www.arb.ca.gov/lfi](http://www.arb.ca.gov/lfi)

Listserv (orspark):

[www.arb.ca.gov/listserv/listserv\\_ind.php?listname=orspark](http://www.arb.ca.gov/listserv/listserv_ind.php?listname=orspark)

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(916) 327-5610

Email: [mwilliam@arb.ca.gov](mailto:mwilliam@arb.ca.gov)

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